

Work Order ID 134198

Monday, July 06, 2015 2:22:04 PM

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Page 1

Item ID: D206-667-103 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4
Start Date: 7/6/2015 Start Qty: 1.00 *1* Cust Item ID:
Required Date: 7/6/2015 Req'd Qty: 1.00 *1* Customer:
Reference:

Approvals: Process Plan: ML3 Date: JUL 06 2015 Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-143	Rev C (DEO)								
DSI9565	A								
DSI9628	A								

100 Document Control 0.00
100 DOCUMENT CONTROL
DC Memo 0.00
Doc.Control -USB or Paperwork Photocopy bluefile and create labels as per PPP D206-667-103 CHG006

110 Pick Kit 0.00
110 Packaging
Packaging Memo 0.00
Packaging

AUG 21 2015

DAS
8
9-89

BC

15/07/08

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Item ID: D206-667-103

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N900040100Setup Start ***NS1***

Revision ID:

Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Stop ***NS2***Start Date: 7/6/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 7/6/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***
Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
120	BENDING MACHINE - CROSSTUBES								
CNC Bend 2	Memo	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D206-667-143 using CNC bender program								
130	QC15- Crosstube Dimensional Check	0.00							
130									
QC	Memo	0.00							
Quality Control									

P.T.O.last page
DAS**47**

9-89

1507-28

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Item ID: D206-667-103

Accept

N900040100

Setup Start

NS1

Revision ID:

Stop

NS2

Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 7/6/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

140

Crosstubes

Crosstubes

Crosstubes

Memo

0.00

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: *****

1- Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-143: Drill all (3) top holes. Holes facing inboard.

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: *****2- Drill Fwd rivet holes using drill Jig DT8787 fwd as per Dwg D206-667-143.
Note: Fwd side has 3x top holes. Facing inboard.

3- C'sink holes as per Dwg D206-667-143. Allow rivet to sit below surface to compensate for paint.

4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins. Drill ONLY 2 top holes ONLY plug most bottom holes to prevent accidental drilling. Drill holes and ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill only the top (2) holes.

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: *****

5- Drill Aft rivet holes using drill Jig DT8787 aft as per Dwg D206-667-143.

***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING*****
VERIFIED BY: *****

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Item ID: D206-667-103

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N900040100Setup Start ***NS1***

Revision ID:

Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Stop ***NS2***

Start Date: 7/6/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 7/6/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

6- C'sink holes as per Dwg D206-667-147. Allow rivet to sit below surface to compensate for paint.

7- Scribe part # and batch # using vibrating stylus as per Dwg D206-667-143
Inside of Cuff (Do not engrave on outside of tube)8- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr
& Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143

150

QC5- Inspect part completeness to step on W/O

0.00

150

QC

Memo

0.00

Quality Control

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

160

0.00

160

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***

1- Clean crosstube with wash'n wipe

1 0

DAS
49
9-89
15/07/24
DAS
41
9-89
15-7-30

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Item ID: D206-667-103

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N900040100Setup Start ***NS1***

Revision ID:

Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Stop ***NS2***Start Date: 7/6/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 7/6/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
204		0.00							DAS 41 9-89
204						1			
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								15-7-30
	1- PRESSURE WASH AND THEN USE WASH'N WIPE TO CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION								
206	QC7-Inspect Chemical Conversion Coat	0.00							DAS 38 9-89
206						1			
QC	Memo	0.00							
Quality Control	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***								

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Required Date: 7/6/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	SprayPaint	0.00				1			DAS 41 9-89 15-8-11
210	SprayPaint	Memo							
Spray Painting	*** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** *** MASK AREA UNDER CLAMP PRIOR TO PAINTING AS PER DWG DEO*** 1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: <u>132384</u> Start Time: <u>700</u> Fininsh Time: <u>800</u> PAINT: <u>132422</u> Start Time: <u>1230</u> Finish Time: <u>130</u>	0.00							
220	QC14- Inspect Spray Paint	0.00				1			DAS 38 9-89
220	QC	Memo							
Quality Control	Wrap in plastic bag to protect from scratches	0.00							

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Stop ***NS2***Start Date: 7/6/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 7/6/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230		0.00							
230	Crosstubes					<u>1</u>			DAS 41
Crosstubes	Memo	0.00							<u>989</u> 15-8-13

INSTALL GROUNDING CLAMP AND SEAL WITH SIKAFLEX AS PER
DWG AND DEOA/R SIKAFLEX BATCH: 132705exp 2/161-Abrade mating surfaces of support and crosstube with 180 grit sandpaper,
clean the area with MEK or equivalent as per dwg

2-Install supports with Proseal 890 per D206-667-143 (DEO) and QSI 015

A/R Proseal 890 Batch: 132655EXP: 3/16

3-Install supports clamps Using Dt9565 as per Dwg D206-667-143

(DEO), Torque to 80-100 IN-LBS.

PROSEAL CURE TIME 72 HOURS:

Start: 15-8-13Finish: 15-8-164-Install nut plates as per Dwg D206-667-143. Touch-up rivet heads with Imron
paint.

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N900040100Setup Start ***NS1***

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Stop ***NS2***

Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 7/6/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270	Packaging	0.00							02 9-89
270									
Packaging	Memo	0.00							
Packaging	Identify and pack for shipping as per PPP D206-667-103 Location : FG103								AUG 24 2015
280	QC21- Final Inspection - Work Order Release	0.00							
280									
QC	Memo	0.00							AUG 24 2015
Quality Control									

AUG 24 2015

Picklist Print

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Parent Item: D206-667-103

D206-667-103

Parent Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015

Required Date: 7/6/2015

Start Qty: 1.00

Required Qty: 1.00

Comments:
 IPP Rev:F 05.09.01 Add holes for compatibility with Bell SkidtubesKJ/JLM
 IPP Rev:G 08-06-03 update as per DSI9415 (ECN1198) DD verified by:
 IPP Rev: H 08.11.17 QC5 was QC6 at step 12 KJ verified by: EC
 IPP Rev:I 08-12-15 add magnobond DD verified by:EC
 IPP Rev J 09.01.06 ECN 08-562 EC verified by: DD
 IPP Rev:K 09-01-19 as per DSI9439 DD verified by:EC IPP REV:L
 11.08.05 PER ECN 11-615 DD VERF:EC IPP REV:M 12.08.20
 DSI9628 revA (ECN12-631) DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D206-667-103TRN

Manufactured

No

110

Each

6.0000

1

1

D206-667-103TRN

Crosstube Turning Detaill

BC 15/07/08

Location	Loc Qty	Loc Code
LG014	6	
125681	1	
125682	1	
129304	1	
129305	1	
132287	1	
132288	1	

D2873-043

Manufactured

No

230

Each

33.0000

2

2

D2873-043

Nut Plate Assembly

DAS
41
9-89

15-8-11

Location	Loc Qty	Loc Code
133913		
133401		
LG050	13	
128814	13	
LG052	20	
132454	20	

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Parent Item: D206-667-103

D206-667-103

Parent Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015

Required Date: 7/6/2015

Start Qty: 1.00

Required Qty: 1.00

D2873-045

Manufactured No

230

Each

45.0000

2

2

DAS

41

9-89

15-8-11

D2873-045

Nut Plate Assembly

**

Location

Loc Qty

Loc Code

LG052

45

131863

5

132618

40

2

D2891-1

Manufactured No

230

Each

29.0000

2

2

DAS

41

9-89

15-8-13

D2891-1

Support 2.25

**

Location

Loc Qty

Loc Code

FG

2

84164

2

LG052

27

131728

7

132440

10

133102

10

2

D3595-063-395

Manufactured No

230

Each

84.0000

4

4

DAS

41

9-89

15-8-13

D3595-063-395

Rubber Cushion 0.63" wide x 3.95" Long

**

Location

Loc Qty

Loc Code

FG

5

87353

5

LG051

79

115737

4

130643

26

131818

49

4

RUBBER CUSHION .63" x 3.95" (4)

Picklist Print

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Parent Item: D206-667-103

D206-667-103

Parent Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015

Required Date: 7/6/2015

Start Qty: 1.00

Required Qty: 1.00

MS20601-AD4W8

Purchased

No

230

Each

354.0000

14

14

DAS

41

9-89

15-8-11

MS20601-AD4W8

RIVET

**

Location

Loc Qty

Loc Code

LG051

142

M132256

142

ST308

212

M128650

12

M132107

200

16 -> 2 scrap

MS21920-20

Purchased

No

230

Each

172.0000

4

4

DAS

41

9-89

15-8-13

MS21920-20

Clamp

**

Location

Loc Qty

Loc Code

FG

2

122254

2

LG050

99

m128650

99

LG056

71

m132675

71

4

AN5-30A

Purchased

No

250

Each

127.0000

4

4

**

Location

Loc Qty

Loc Code

ST299A

127

M127363

127

4

DAS

27

9-89

AUG 18 2015

DAS

26

9-89

DAS
6
9-89

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Work Order ID: 134198

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Parent Item: D206-667-103

D206-667-103

Parent Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015

Required Date: 7/6/2015

Start Qty: 1.00

Required Qty: 1.00

AN5-32A

Purchased

No

250

Each

231.0000

4

4

AN5-32A

Bolt

**

DAS
27
9-89

DAS
26
9-89

DAS
6
9-89

Location

Loc Qty

Loc Code

ST299A

215

m131139

96

m132189

19

m132536

100

ST336

16

m128403

7

m128634

9

4

AN5-7A

Purchased

No

250

Each

4,690.000

10

10

AN5-7A

Bolt

**

DAS
27
9-89

68-6
26
DAS
9-89

DAS
6
9-89

Location

Loc Qty

Loc Code

ST299A

4529

M119017

2300

M123355

1510

M123532

20

m126010

699

ST338

161

m126105

161

0

AN970-4

Purchased

No

250

Each

341.0000

12

12

AN970-4

Washer

**

DAS
27
9-89

DAS
26
9-89

DAS
6
9-89

Location

Loc Qty

Loc Code

ST329

341

4087

1

m129521

340

12

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Shop Packet Print

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Work Order ID: 134198

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Parent Item: D206-667-103

D206-667-103

Parent Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015

Required Date: 7/6/2015

Start Qty: 1.00

Required Qty: 1.00

D206-667-017

Manufactured No

250

Each

14.0000

1

1

DAS

D206-667-017

Grounding Strap

41

9-89

15-8-18

133403

1

Location

Loc Qty

Loc Code

FG

2

97504

2

LG

2

128820

2

LG050

4

130888

2

133403

2

LG054

6

129739

3

131747

1

132460

2

MS21042L5

Purchased

No

250

Each

944.0000

4

4

MS21042L5

Nut

DAS

27

9-89

AUG 18 2015

DAS
26
9-89

Location

Loc Qty

Loc Code

GA

146

m127813

146

ST260a

200

m132256

200

ST305

598

m127813

19

m131340

21

m132123

58

m132677

500

DAS
6
9-89

4

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D206-667-103

Parent Item Name: Fwd Crosstube - High 206L / L1 / L3 / L4

Start Date: 7/6/2015

Required Date: 7/6/2015

Start Qty: 1.00

Required Qty: 1.00

NAS1149D0563J

Purchased

No

250

Each

1,970.000

18

18

NAS1149D0563.J

Washer

**DAS
27
9-89**

AUG 18 2015

**DAS
6
9-89**

Location

Loc Qty

Loc Code

GA	53	
m125807	53	
ST260a	1742	
m130799	63	
m132035	79	
<u>m132256</u>	1000	
m132677	600	
ST269	156	
m128257	156	
ST271	19	
m131026	19	

18

**DAS
26
9-89**

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation		Disposition			

Root Cause			FAULT CATEGORY		
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐				

Item	Qty -143	Part Number	Description
1	X	D206-667-143	CROSSTUBE ASSEMBLY (206L HIGH FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6002-115
FINISHED LENGTH = 104.98±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-143" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 15.5 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER

134198 MLC
1507-06

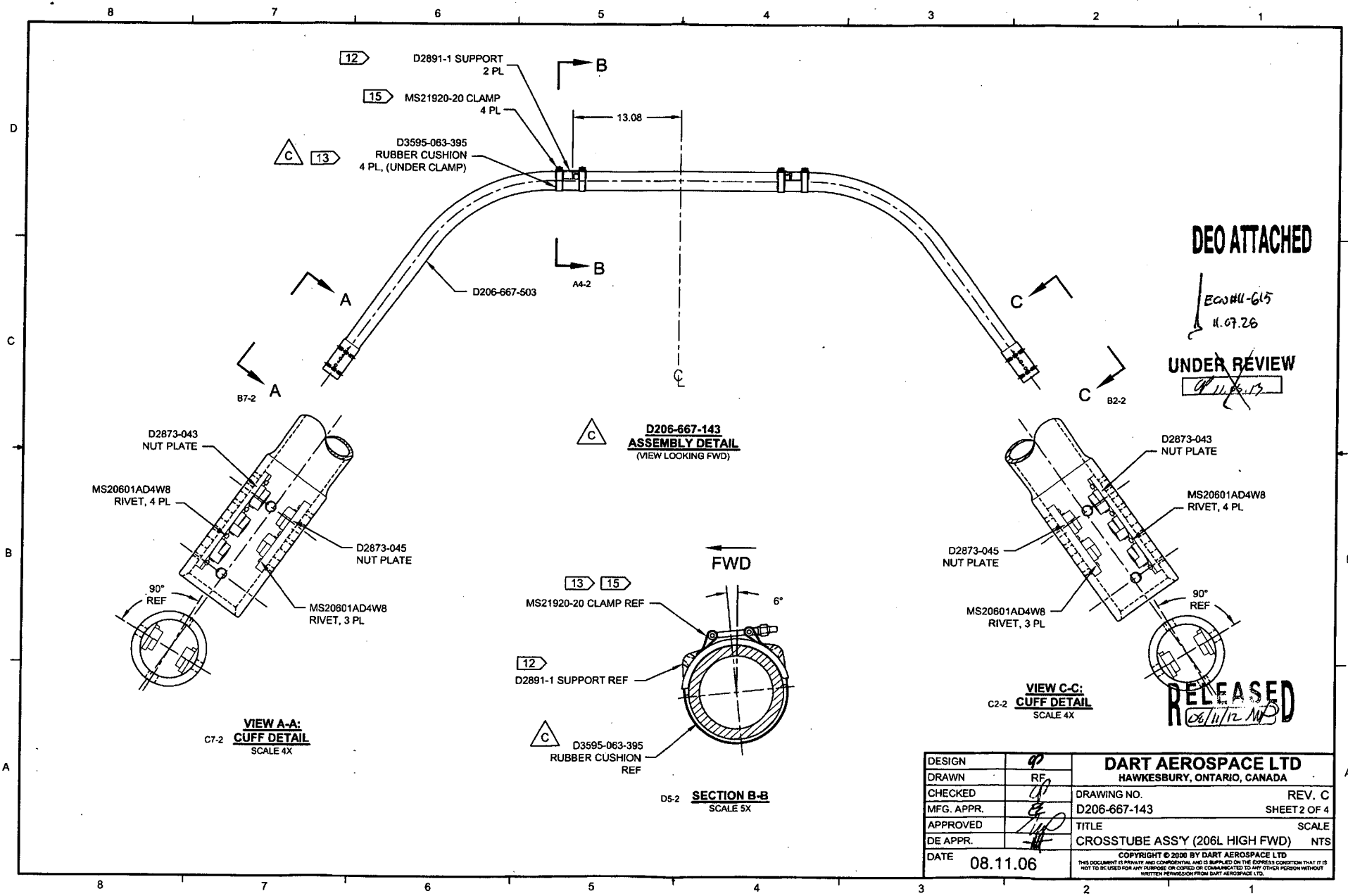
000 #1-615
11.07.28

UNDER REVIEW

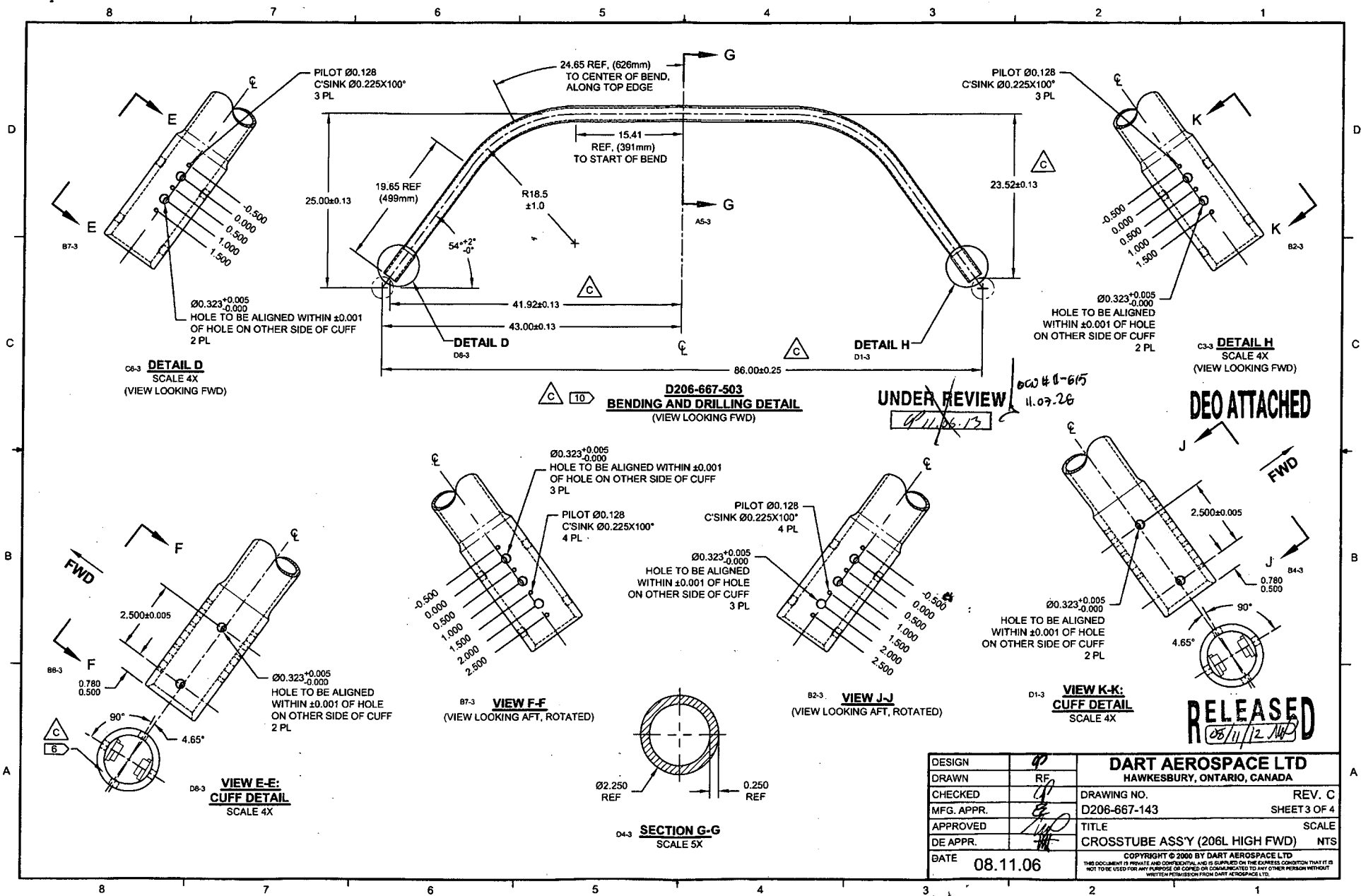
01/11/08

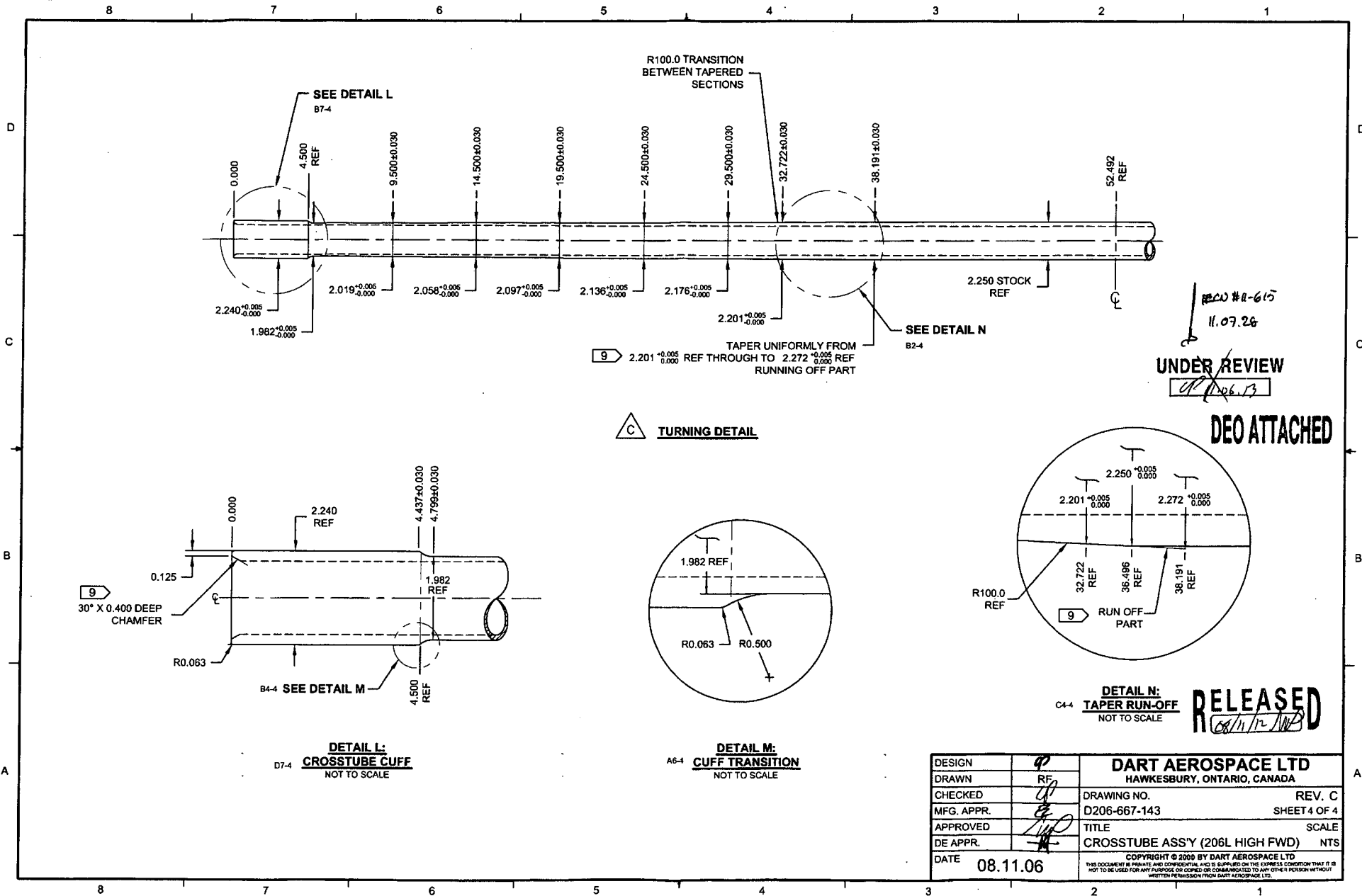
DEO ATTACHED RELEASED
08/11/12

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D8-2 & A5-2); REMOVED REF. & ADD TOLERANCE (ZN D3-3, C4-3, C5-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.28
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	01	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO. REV. C D206-667-143 SHEET 1 OF 4	
CHECKED	01	TITLE SCALE CROSSTUBE ASS'Y (206L HIGH FWD) NTS	
MFG. APPR.	01	DATE 08.11.06	
APPROVED	01	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DE APPR.	01		



DESIGN	97	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	97	DRAWING NO.	REV. C
MFG. APPR.	97	D206-667-143	SHEET 2 OF 4
APPROVED	97	TITLE	SCALE
DE APPR.	97	CROSSTUBE ASSY (206L HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	





DRAWING NO. D206-667-143	TITLE CROSSTUBE ASS'Y (206L HIGH FWD)	REV. C	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-143-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>Q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>W</i>	APPROVED <i>W</i>		DE APPR. <i>W</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -143	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRABE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
W

DRAWING NO. D206-667-143		TITLE CROSSTUBE ASS'Y (206L HIGH FWD)		REV. C		DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-143-C-2		SHEET NO. SHEET 1 OF 1		SCALE NTS	
DRAWN AJS		CHECKED [Signature]		MFG. APPR. [Signature]		APPROVED [Signature]		DE APPR. [Signature]					
DATE 12.08.02		DATE 12.08.02		DATE 12.08.02		DATE 12.08.02		DATE 12-08-02					

PURPOSE:

ADD ELECTRICAL GROUNDING STRAP

CHANGE:

PARTS LIST:

ITEM	QTY	PART NUMBER	DESCRIPTION
1	X	D206-667-143	CROSSTUBE ASSEMBLY (206L HIGH FWD)
10	2	AN742D36	CLAMP
11	2	MS9165-05	ANGLE BRACKET
12	2	MS21042L3	NUT (OR MS21042-3)
13	2	MS27039-1-08	SCREW
14	4	NAS1149C0332R	WASHER (OR AN960C10L)

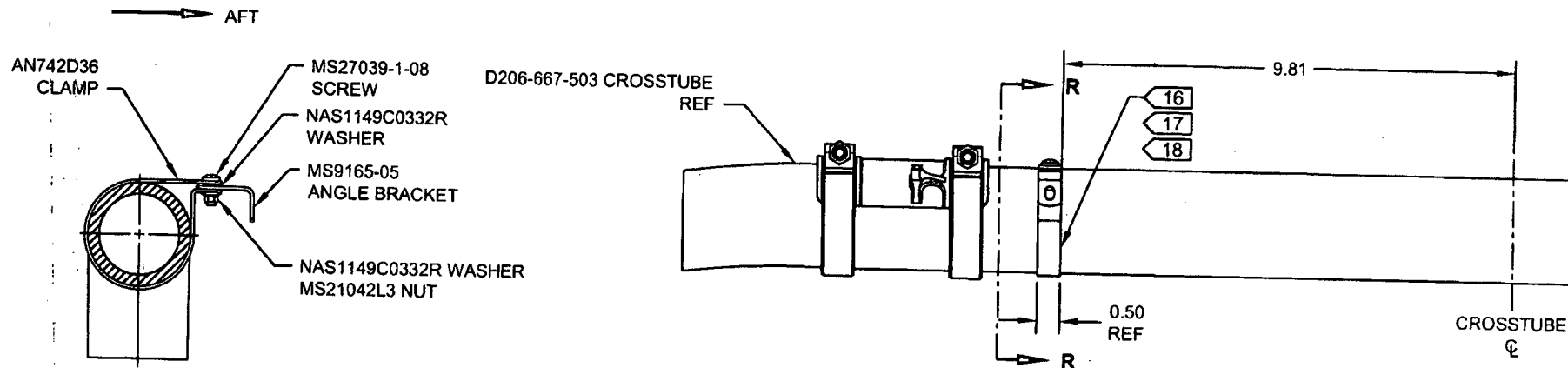
ADD

GENERAL NOTES:

- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-291 OR MIL-S-8802 CLASS B2 OR PROSEAL 890 SEALANT
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MILLIOHMS

ADD

RELEASED
12.08.17
ECN 12-631



SECTION R-R

DETAIL P
BONDING STRAP INSTALLATION 2 PL

DART SERVICE INSTRUCTION

TO AMEND INSTRUCTIONS FOR CONTINUOUS AIRWORTHINESS ICA-D206-667 Rev. 3 OR LATER

REF. CANADIAN STC: SH01-5

REF. FAA STC: SR01304NY

REF. EASA STC: EASA.IM.R.S.01179

PURPOSE:

The supports on the following crosstubes are now installed using Proseal instead of Magnobond:

D206-667-101 @ CHG 004

D206-667-103 @ CHG 005

D206-667-107 @ CHG 002

D206-667-201 @ CHG 004

D206-667-203 @ CHG 004

D206-667-207 @ CHG 002

D407-667-105 @ CHG 004

CHANGE:

For the crosstubes listed above, section 32.4 of ICA-D206-667 is amended as follows. Use Figures 32-4 to 32-8 of ICA-D206-667 for further reference. For crosstubes of an earlier change number, it is recommended that if the supports are removed, the supports should be reinstalled using the procedure listed below.

32.4 SUPPORT INSTALLATION

- 32.4.1 Locate the area on crosstube for installation of support (ref. Figures 32-4 to 32-8 of ICA-D206-667). For D206-667-101/-103/-107/-201 and D407-667-105 crosstubes, the outward face of the support tabs should be 13.08" (332mm) from the crosstube center. For D206-667-203/-207 crosstubes, the outward face of the support tabs should be 10.03" (255mm) from the crosstube center. Ensure paint finish of crosstube is intact; touch up as required per Chapter 5 (5.3.9) of ICA-D206-667.
- 32.4.2 If present, remove any paint/primer on bottom of supports. Abrade mating surfaces of support and crosstube with 400-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.3 Ensure a layer of 3M Scotch-Weld 2216 B/A Epoxy Adhesive is on the bottom of the support. If required, either apply or touch-up support to have a 0.03" to 0.05" thick layer of adhesive over the entire mating surface. Allow supports to cure for 24 hours.
- 32.4.4 Abrade mating surfaces of support (after cure) and crosstube with 180-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.5 Apply a 0.04" to 0.07" thick layer of Proseal 890 Class B or AMS-S-8802 Class B sealant underneath applicable support and install support.
- 32.4.6 Install the clamps opposite to crosstube support as shown in Figures 32-4 to 32-8 of ICA-D206-667. Install rubber cushions underneath each clamp around the bottom circumference of the crosstube up to the crosstube centerline. Torque clamps 80-100 in-lb (9.0-11.3 Nm). It is acceptable to use smaller or larger sized MS21920-XX clamps than those listed in ICA-D206-667, ensure that after torquing the clamps per this instruction, the nuts are in safety but not bottomed out
- 32.4.7 Prior to installing crosstube on aircraft, allow supports to cure for 72 hours and recheck torque on clamps.

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
DAO # 01-O-01

APPROVED

BY: 
D. SHEPHERD (DE # 02)

DATE: 11.07.20

CERT. NO.: SH01-5

ISSUE NO.: 3

A	NEW ISSUE	CP	11.07.15
REV.	DESCRIPTION	BY	DATE
DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN			
CHECKED	ASS	DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9565	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		SUPPORT INSTALLATION CHANGE	NTS
DATE	11.07.15	COPYRIGHT © 2011 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

DART SERVICE INSTRUCTION

**TO AMEND INSTALLATION INSTRUCTIONS IIN-D206-667 REV. D AND EARLIER AND
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D206-667 REV. 3 AND EARLIER**

REF: CANADIAN STC: SH01-5

REF: FAA STC: SR01304NY

REF: EASA STC: EASA.IM.R.S.01179

PURPOSE:

The purpose of this service instruction is to permanently add the D206-667-017 Kit to the DXXX-667-101/-103/-105/-107 Crosstube kits.

INSTRUCTIONS:

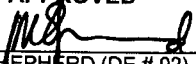
DXXX-667-101/-103/-105/-107 Crosstubes at CHG 005/006/005/003 (respectively) and later are supplied with the D206-667-017 Grounding Strap Kit installed per section 3.2 of IIN-D206-667 Rev. D.

WEIGHT AND BALANCE

There is a negligible weight change associated with the installation of this kit.

CANADA
DEPARTMENT OF TRANSPORT
AIRCRAFT CERTIFICATION
BRANCH
DAO # 01-O-01

APPROVED

BY: 
D. SHEPHERD (DE # 02)

DATE: 12.08.02
CERT. NO.: SH01-5
ISSUE NO.: 3

A	NEW ISSUE (REF CIR 12-3)	AJS	11.08.02
REV.	DESCRIPTION	BY	DATE
DESIGN	AJS	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	AJS		
CHECKED		DRAWING NO.	REV. A
MFG. APPR.	N/A	DSI 9628	SHEET 1 OF 1
APPROVED		TITLE	SCALE
DE APPR.		GROUNDING STRAP INSTALLATION	NTS
DATE	12.08.02	COPYRIGHT © 2012 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

D206-667-103 bending folio

Batch Number:

2.25 rollers x 3 + 1.6 shims under rollers

buggie shims 3.125" (new buggy), buggy goes on small table/adjust supporting rollers as required.

Lines; **19.75"** and **37.125"** from cuffs.

Only Buggy A used

STEP 1

Run programs 1-2-3-4 starting from **37.125** line with longest part of tube on **small table**, Y1630 / W3200 programs run down taper.

Approach will automatically set itself after Prog.4 for Prog.10-11-12Make sure laser falls properly on tangent line.

STEP 2

Run programs 10-12 from **19.75"** line CHECK BETWEEN EACH PROGRAM Y3400 / W3344 . Programs run up taper. Ensure buggy clears table. **small table**

Approaches for prog 13 up are done automatically when program returns to tangent line, helper is to ensure that tangent line falls properly on laser

FOR SIDE B.....MAKE SURE BUGGY DOES NOT TOUCH EDGE OF BENDER TABLE

09-10-14 bent two tubes first one took Side A prog 13 x2.....Side B prog 12B (over bent) was missing 100 thou .from 12A to 12B 10 points last two lines
second tube Side A prog 13..... Side B prog 12

11-06-08 ran 2 tubes, first tube finished @ program 16 both sides, second finished @ 15 both sides. both tubes bent very evenly on each side. after bending according to folio, both tubes ran 12a,13,14,15. one tube required program 16 to finish. JW

12-08-1 ran 2 tubes according to previous note. stopped checking tube at prog 10-11-12. ran: 1,2,3,4,10,11,12, check. ran 12a,13,14,15 checking in between each. tube was nice, even, and tubes finished at either 15 or 16. consistent with previous note. JW

Passes:

(9)	1 2 3 4 10 11 12 13 14 15 16 16A 16B	(10)	1 2 3 4 10 11 12 13 14 15 16 16A 16B
-----	---	------	---

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: 

Date: 15/09/05

QA Closed: 

Date: 15/09/05

Work Order: <u>134198</u>	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Work Order Update ☐	AGAINST DEPARTMENT/PROCESS			
Part No. <u>D206-667-143 Rev C</u>		Skid-tube ☐	Crosstube ☒	Water Jet ☐	Engineering ☐
NCR No. <u>15-5304</u>		Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐
		Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐
		Large Fab ☐	Composite ☐	Supplier ☐	

Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data		15.07.23	120	1	DIM 41.750 SHOULD BE 41.92±0.13 DIM 83.5625 SHOULD BE 83.58-84.10 (ref to FAI sheet) LC material	A.P. 15.07.23	NEGLECTIBLE EFFECT ON PLACEMENT OF FWD SUPPORTS. NEGLECTIBLE STRUCTURAL EFFECT. ACCEPTABLE TO USE AS IS	A.P. 15.07.23	A.P. 15.07.23	DAS 9 9-89 15.07.24
Equip/Tooling									DAS 9 9-89	
Operator										
Material	✓									
Setup										
Other										
Process										
Supplier										
Training										
Unapproved										

FAULT CATEGORY

Landing Gear	General
☐ Bending	☐ Bend
☐ Centre Not Concentric to O/S	☐ BOM/Route
☐ Cracks	☐ Broken/Damaged
☐ Crushed/Crimped	☐ Burrs
☐ Cuffs	☐ Contamination
☐ Heat Treat	☐ Countersink
☐ Inspection Strip in Tube	☐ Cut Too Short
☐ Ripples in Bend	☐ Drill Holes
☐ Torque Waves in Extrusion	☐ Drawing
☐ Turning Sequence	☐ Finish
☐ Wave/Twist in Tube	☐ Folio
	☐ Grain
	☐ Hardware
	☐ Inspection Incomplete
	☐ Instructions Incomplete/Unclear
	☐ Maintenance
	☐ Mislabeled
	☐ Misread
	☐ Offset
	☐ Out of Calibration
	☐ Out of Sequence
	☐ Outside Dimensions
	☐ Ovalized
	☒ Over/Under tolerance
	☐ Part Incorrect
	☐ Part Lost/Missing
	☐ Part Moved
	☐ Positioned Wrong
	☐ Power Loss/Surge
	☐ Pressure/Forced
	☐ Temperature/Cure
	☐ Weld
	☐ Wrong Stock Pulled
	☐ Other



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID **PO29323**

Purchase Order Date 7/30/2015

PO Print Date 7/30/2015

Page Number 1 of 3

Order From :

VC-SKY001

SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

Ship To : DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

FAKED

Contact Name

Vendor Phone 905-678-5636

Ship To Contact

Ship To Phone

Ship Via: Delivered

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax # 10127-2607

Terms Net 30

Currency CAD

FOB FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	71401-45	PROCUREMENT QUALITY CLAUSES	7/30/2015 No 7/30/2015		1.00	\$0.00	\$0.00
PROCUREMENT QUALITY CLAUSES A005 RIGHT OF ENTRY A016 PERSONNEL QUALIFICATION A020 NON - DESTRUCTIVE TEST/INSPECTION IDENTIFICATION A041 QUALITY MANAGEMENT SYSTEM A042 DART NOTIFICATION BY SUPPLIER A043 RETENTION OF QUALITY DOCUMENTS							
Line Total:							\$0.00
2	134198	D206-667-103 CROSSTUBE	7/30/2015 Yes 7/30/2015		1.00	\$155.00	\$155.00
LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2							
Line Total:							\$155.00

SP/5-07-30

Note:

7/30/2015



skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMQ 365

WO #: MWO25374	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO29323
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT (LIQUID PENETRANT CRACK TEST) ON THE FOLLOWING FIVE CROSSTUBES:

ID# D206-667-103 FWD CROSSTUBES-HIGH

1 WORK ORDER ID 131490 2-WORK ORDER ID 132092
3.WORK ORDER ID 134198

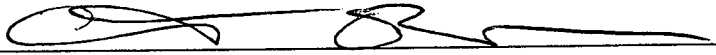
ID# D206-667-101 CROSSTUBES

4 WORK ORDER ID 112790 5 WORK ORDER ID 134798

SPIS-07-30

Action Taken:						Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE (ITEMS 1-5) AS PER ASTM1417M-13						30 JUL 2015	 e
NO CRACK FOUND							
PEN.(ZL-56, MPO13600), DEV.(SKD-S2, MPO11715), CLEANER(SKC-S, MPO13923)							
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp 	Date: 30 JUL 2015
Name: CHRISTIAN BRIEN		